

LP133WH4
Liquid Crystal Display

Product Specification

SPECIFICATION FOR APPROVAL

(◆) Preliminary Specification

() Final Specification

Title	13.3" HD TFT LCD
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Customer	
MODEL	

SUPPLIER	LG Display Co., Ltd.
*MODEL	LP133WH4
Suffix	TJA1

*When you obtain standard approval,
please use the above model name without suffix

APPROVED BY	SIGNATURE
/	_____
/	_____
/	_____

Please return 1 copy for your confirmation with your signature and comments.

APPROVED BY	SIGNATURE
Y. D. Kim / Manager	_____
REVIEWED BY	
N. D Son / Engineer	_____
PREPARED BY	
D. Y. Kim / Engineer	
S. W. Kim / Engineer	_____

Products Engineering Dept.
LG Display Co., Ltd

LP133WH4
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RECORD OF REVISIONS

Revision No	Revision Date	Page	Description	EDID ver
0.0	Dec. 31.2010	-	First Draft (Preliminary Specification)	
0.1	Jan. 24. 2011	8	Add FPC CONNECTOR PIN CONFIGURATION	
		14	Add Recommend Power Sequence	
		23	Add Inspection Free Area	
0.2	May 12. 2011	8	Add FPC CONNECTOR PIN CONFIGURATION	
		26-28	Update Inspection Free Area / Panel Burr & Chip	
		29	Add Web-Cam Hole Shift	
0.3	Jun. 16.2011	12	Update signal timing specification	

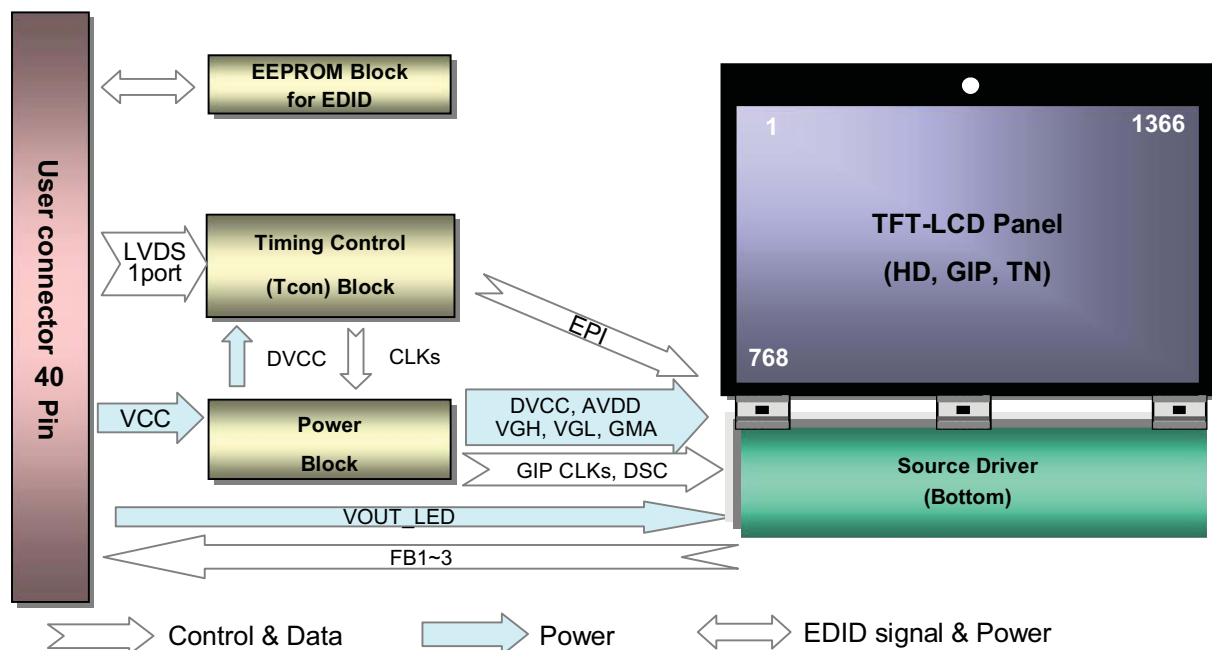


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1. General Description

The LP133WH4 is a Color Active Matrix Liquid Crystal Display. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has 13.3 inches diagonally measured active display area with HD resolution (1366 horizontal by 768 vertical pixel array). Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262,144 colors. The LP133WH4 has been designed to apply the interface method that enables low power, high speed, low EMI. The LP133WH4 is intended to support applications where thin thickness, low power are critical factors and graphic displays are important. In combination with the vertical arrangement of the sub-pixels, the LP133WH4 characteristics provide an excellent flat display for office automation products such as Notebook PC.



General Features

Active Screen Size	13.3 inches diagonal
Outline Dimension	1) Panel (W/O PCB) : 308.0(H, Typ.) × 190.0(V, Typ.) [mm] 2) Panel (With PCB) : 308.0(H, Typ.) × 202.5(V, Typ.) [mm]
Pixel Pitch	0.2148 mm × 0.2148 mm
Pixel Format	1366 horiz. by 768 vert. Pixels RGB strip arrangement
Color Depth	6-bit, 262,144 colors
Transmittance (With POL)	TBD % (Typ.)
Power Consumption	Logic : 1.0 W (Typ.@ Mosaic)
Weight	180 g (Max.)
Display Operating Mode	Transmissive mode, normally white
Surface Treatment	Glare treatment (3H) of the front Polarizer
RoHS Compliance	Yes
BFR / PVC / As Free	Yes for all



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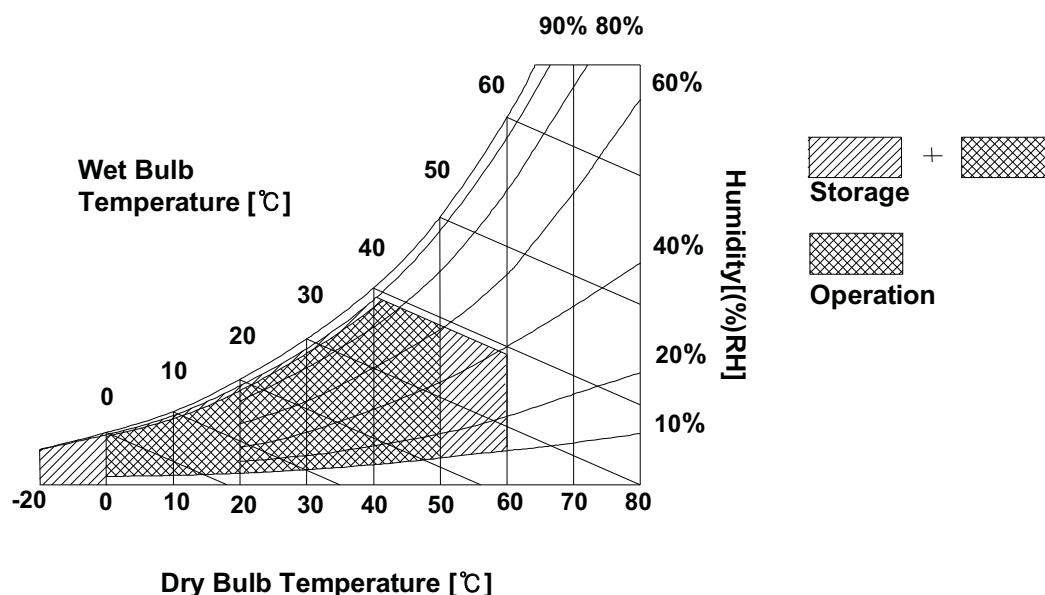
2. Absolute Maximum Ratings

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Table 1. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Values		Units	Notes
		Min	Max		
Power Input Voltage	VCC	-0.3	4.0	Vdc	at 25 ± 5°C
Operating Temperature	TOP	0	50	°C	1
Storage Temperature	HST	-20	60	°C	1
Operating Ambient Humidity	HOP	10	90	%RH	1
Storage Humidity	HST	10	90	%RH	1

Note : 1. Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39°C Max, and no condensation of water.





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3. Electrical Specifications

3-1. Electrical Characteristics

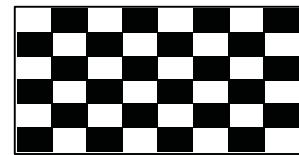
The LP133WH4 requires one power inputs. The first logic is employed to power the LCD electronics and to drive the TFT array and liquid crystal.

Table 2. ELECTRICAL CHARACTERISTICS

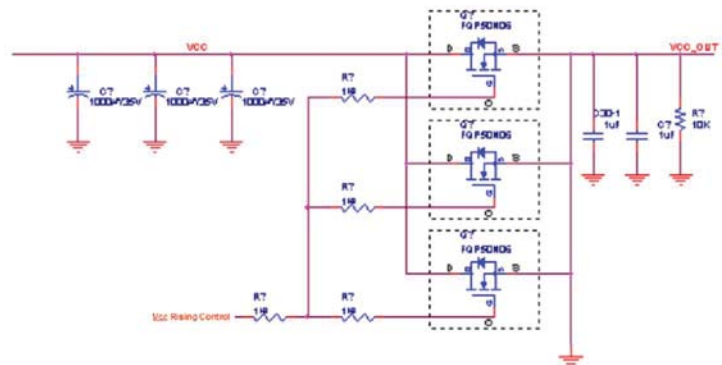
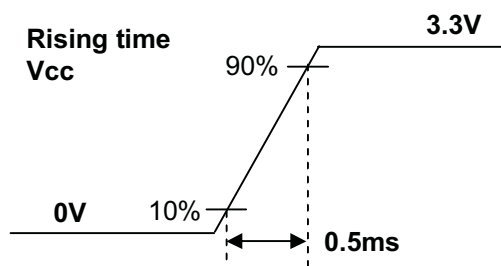
Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
LOGIC :						
Power Supply Input Voltage	V _{CC}	3.0	3.3	3.6	V	1
Power Supply Input Current	I _{CC}	-	320	365	mA	2
Power Consumption	P _{CC}	-	1.0	1.2	W	
Power Supply Inrush Current	I _{CC_P}	-	-	1500	mA	3
LVDS Impedance	Z _{LVDS}	90	100	110	Ω	4
LED : W/O LED Driver, 3string x 11ea						
LED Output Voltage	V _{OUT}		35.2	37.4	V	
LED Output Current	I _{OUT}		57	58.5	mA	
LED Power Consumption	P _{OUT}		2.0	2.2	W	

Note)

- The measuring position is the connector of Board Ass'y and the test conditions are under 25°C, f_v = 60Hz, Black pattern.
 - The specified I_{CC} current and power consumption are under the V_{CC} = 3.3V, 25°C, f_v = 60Hz condition.
 - This Spec. is the max load condition for the cable impedance designing.
 - This impedance value is needed for proper display and measured from LVDS Tx to the mating connector.
- ** The below figures are the measuring V_{CC} condition and the V_{CC} control block LGD used.
The V_{CC} condition is same as the minimum of T1 at Power on sequence.



Mosaic Pattern





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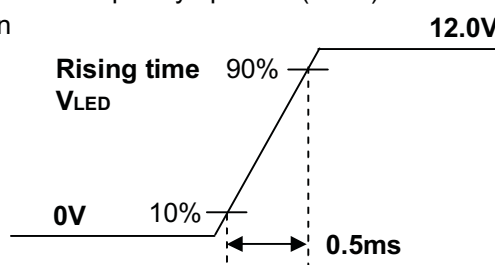
※ LGD recommend below Electrical Characteristics of LED Driver.

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
BACKLIGHT : (with LED Driver)						
LED Power Inrush Current	I _{LED_P}	-	500	1000	mA	7
PWM Duty Ratio		1	-	100	%	8
PWM Jitter	-	0	-	0.2	%	9
PWM Impedance	Z _{PWM}	20	40	60	kΩ	
PWM Frequency	F _{PWM}	200	340	1000	Hz	10
PWM High Level Voltage	V _{PWM_H}	2.2	-	5.3	V	
PWM Low Level Voltage	V _{PWM_L}	0	-	0.3	V	
LED_EN Impedance	Z _{PWM}	20	40	60	kΩ	
LED_EN High Voltage	V _{LED_EN_H}	2.2	-	5.3	V	
LED_EN Low Voltage	V _{LED_EN_L}	0	-	0.3	V	

7. The current and power consumption with LED Driver are under the V_{led} = 12.0V , 25℃, Dimming of Max luminance and White pattern with the normal frame frequency operated(60Hz).

8. The below figures are the measuring V_{led} condition and the V_{led} control block LGD used.

V_{LED} control block is same with V_{cc} control block.



9. The operation of LED Driver below minimum dimming ratio may cause flickering or reliability issue.

If Jitter of PWM is bigger than maximum, it may induce flickering.

10. This Spec. is not effective at 100% dimming ratio as an exception because it has DC level equivalent to 0Hz. In spite of acceptable range as defined, the PWM Frequency should be fixed and stable for more consistent brightness control at any specific level desired.

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3-2. Interface Connections

This Board Ass'y employs two interface connections, a 40 pin connector used for the module electronics interface and the other connector used for the integral backlight system.

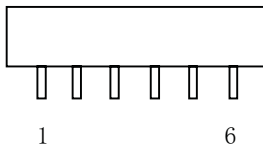
Table 3. MODULE CONNECTOR PIN CONFIGURATION (CN1)

Pin	Symbol	Description	Notes
1	NC	No Connection	[Interface Chip] 1. LCD : TLi, TL2343EP (LCD Controller) Including LVDS Receiver. 2. System : LVDSRx or equivalent * Pin to Pin compatible with LVDS [Connector] JAE HD1S040HA1 LSMtron GT05Q-40S-H10 or equivalent [Mating Connector] 20345-#40E-## series or equivalent [LED Block] LED block move to system set base [Connector pin arrangement] Check B/Ass'y drawing (Page 20)
2	VCC	LCD Logic and driver power (3.3V Typ.)	
3	VCC	LCD Logic and driver power (3.3V Typ.)	
4	V EEDID	DDC Power (3.3V)	
5	BIST	BIST	
6	Clk EEDID	DDC Clock	
7	DATA EEDID	DDC Data	
8	ORX0-	Negative LVDS differential data input	
9	ORX0+	Positive LVDS differential data input	
10	GND	LCM Ground	
11	ORX1-	Negative LVDS differential data input	
12	ORX1+	Positive LVDS differential data input	
13	GND	LCM Ground	
14	ORX2-	Negative LVDS differential data input	
15	ORX2+	Positive LVDS differential data input	
16	GND	LCM Ground	
17	ORXC-	Negative LVDS differential clock input	
18	ORXC+	Positive LVDS differential clock input	
19	NC	No Connection	
20	NC	No Connection	
21	NC	No Connection	
22	GND	LCM Ground	
23	NC	No Connection	
24	NC	No Connection	
25	GND	LCM Ground	
26	NC	No Connection	
27	NC	No Connection	
28	GND	LCM Ground	
29	NC	No Connection	
30	NC	No Connection	
31	NC	No Connection	
32	FB3	Regulated Current sink	
33	FB2	Regulated Current sink	
34	FB1	Regulated Current sink	
35	NC	No Connection	
36	NC	No Connection	
37	NC	No Connection	
38	VOUT	Boost output voltage	
39	VOUT	Boost output voltage	
40	VOUT	Boost output voltage	

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Table 3-1. FPC CONNECTOR PIN CONFIGURATION (CN2)

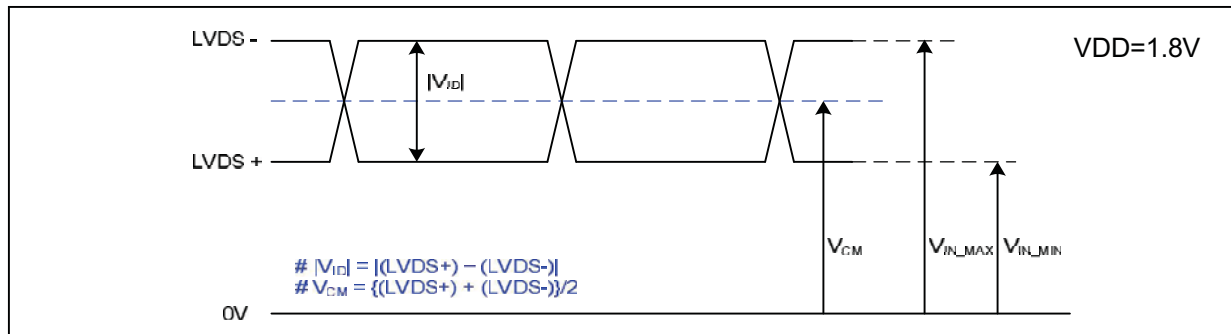
Pin	Symbol	Description	Notes
1	VOUT	LED Anode(Positive)	
2	FB1	LED Cathode (Negative)	
3	VOUT	LED Anode (Positive)	
4	FB2	LED Cathode (Negative)	
5	VOUT	LED Anode (Positive)	
6	FB3	LED Cathode (Negative)	

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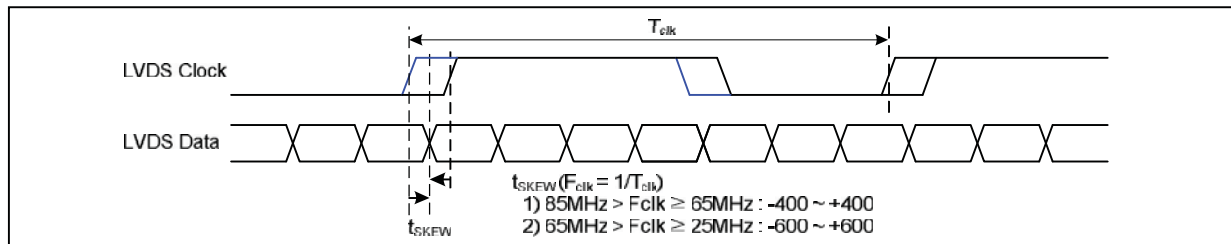
3-3. LVDS Signal Timing Specifications

3-3-1. DC Specification



Description	Symbol	Min	Typ	Max	Unit	Notes
LVDS Differential Voltage	$ V_{ID} $	100	-	600	mV	-
LVDS Common mode Voltage	V_{CM}	$ V_{ID} / 2$	1.2	$VDD - V_{ID} / 2$	V	-
LVDS Input Voltage Range	V_{IN}	0.3	-	VDD	V	-

3-3-2. AC Specification

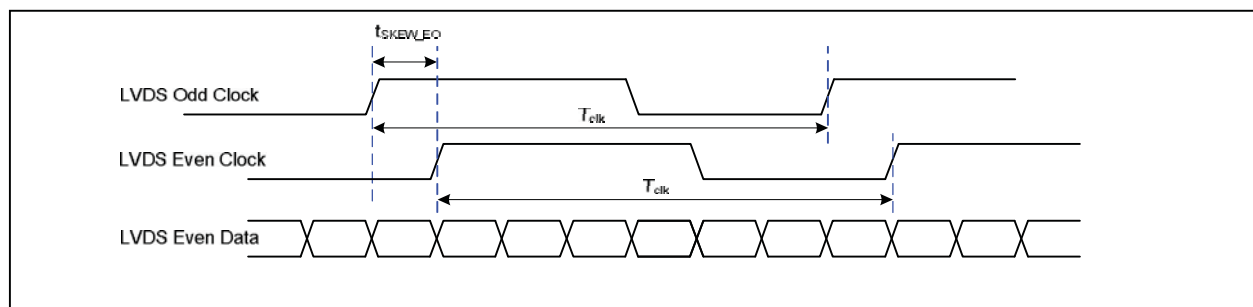


Description	Symbol	Min	Max	Unit	Notes
LVDS Clock to Data Skew Margin	t_{SKEW}	- 400	+ 400	ps	$85MHz > F_{clk} \geq 65MHz$
	t_{SKEW}	- 600	+ 600	ps	$65MHz > F_{clk} \geq 25MHz$
LVDS Clock to Clock Skew Margin (Even to Odd)	t_{SKEW_EO}	- 1/7	+ 1/7	T_{clk}	-
Maximum deviation of input clock frequency during SSC	F_{DEV}	-	± 3	%	-
Maximum modulation frequency of input clock during SSC	F_{MOD}	-	200	KHz	-

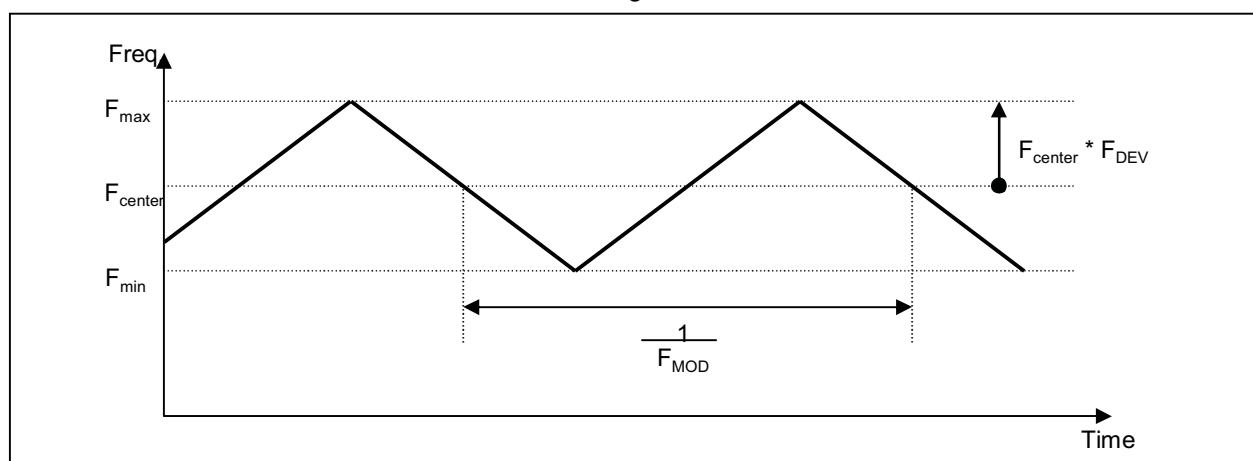


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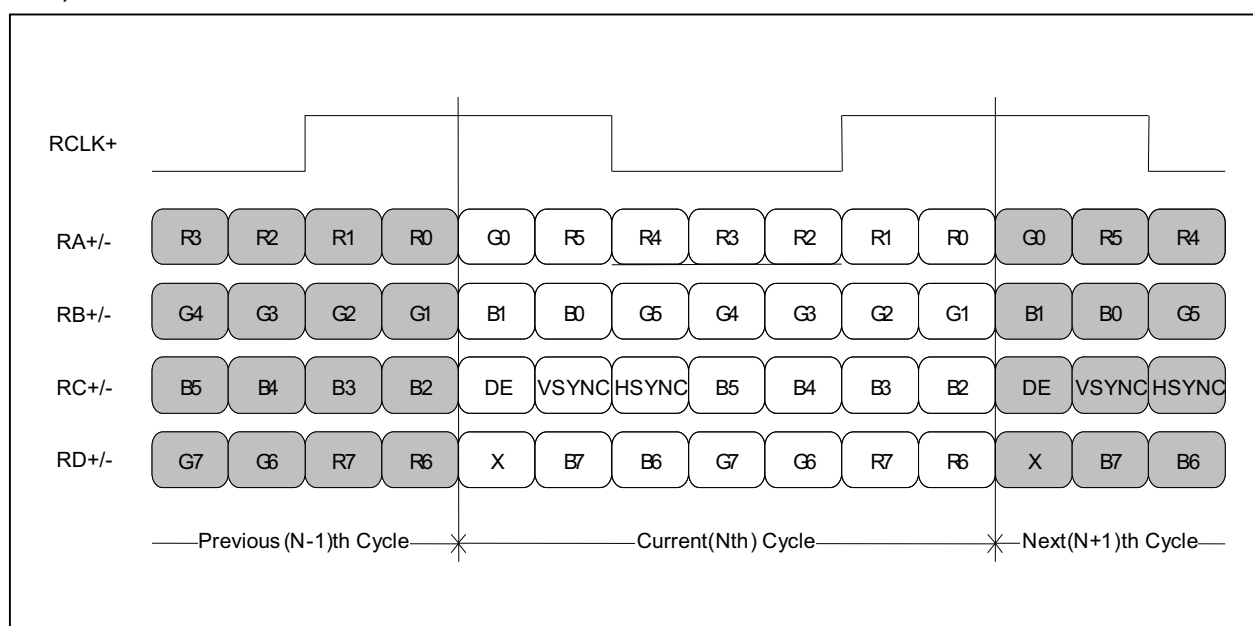
< Clock skew margin between channel >



< Spread Spectrum >

3-3-3. Data Format

1) LVDS 1 Port



< LVDS Data Format >



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3-4. Signal Timing Specifications

This is the signal timing required at the input of the User connector. All of the interface signal timing should be satisfied with the following specifications and specifications of LVDS Tx/Rx for its proper operation.

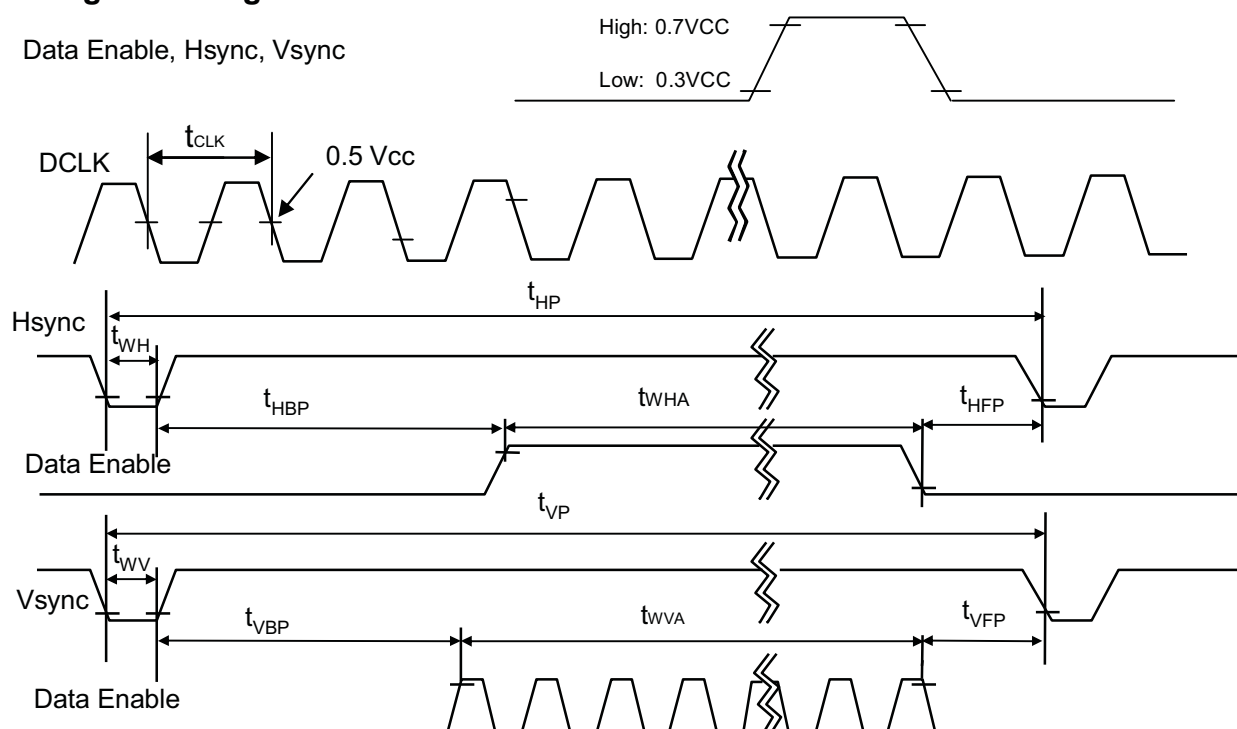
Table 4. TIMING TABLE

ITEM	Symbol		Min	Typ	Max	Unit	Note
DCLK	Frequency	f_{CLK}	68.1	70.0	73.0	MHz	
Hsync	Period	t_{HP}	1462	1492	1536	tCLK	
	Width	t_{WH}	32	48	62		
	Width-Active	t_{WHA}	1366	1366	1366		
Vsync	Period	t_{VP}	776	782	792	tHP	
	Width	t_{WV}	2	5	8		
	Width-Active	t_{WVA}	768	768	768		
Data Enable	Horizontal back porch	t_{HBP}	34	42	60	tCLK	
	Horizontal front porch	t_{HFP}	32	36	40		
	Vertical back porch	t_{VBP}	4	6	12	tHP	
	Vertical front porch	t_{VFP}	2	3	4		

3-5. Signal Timing Waveforms

Condition : VCC = 3.3V

Data Enable, Hsync, Vsync



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3-6. Color Input Data Reference

The brightness of each primary color (red, green and blue) is based on the 6-bit gray scale data input for the color ; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

Table 5. COLOR DATA REFERENCE

Color		Input Color Data																	
		RED						GREEN						BLUE					
		MSB			LSB			MSB			LSB			MSB			LSB		
		R 5	R 4	R 3	R 2	R 1	R 0	G 5	G 4	G 3	G 2	G 1	G 0	B 5	B 4	B 3	B 2	B 1	B 0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	RED (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (01)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	...	...						...						...					
	RED (62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	GREEN (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN (01)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	...	...						...						...					
	GREEN (62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
BLUE	BLUE (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE (01)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	...	...						...						...					
	BLUE (62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1



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3-7. Power Sequence

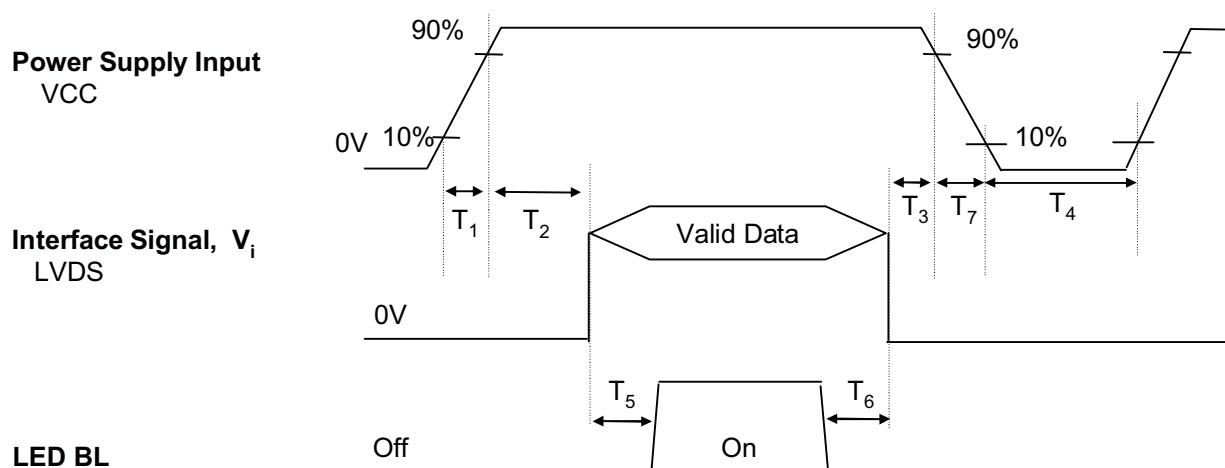


Table 6. POWER SEQUENCE TABLE

Logic Parameter	Value			Units
	Min.	Typ.	Max.	
T ₁	0.5	-	10	ms
T ₂	0	-	50	ms
T ₃	0	-	50	ms
T ₄	400	-	-	ms
T ₅	200	-	-	ms
T ₆	200	-	-	ms
T ₇	0.5	-	10	ms

Note)

1. Do not insert the mating cable when system turn on.
2. Valid Data have to meet "3-3. LVDS Signal Timing Specifications"
3. LGD recommend the rising sequence of LED after the Vcc and valid status of LVDS turn on.

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※ LGD recommend below sequence of LED Driver inputs.

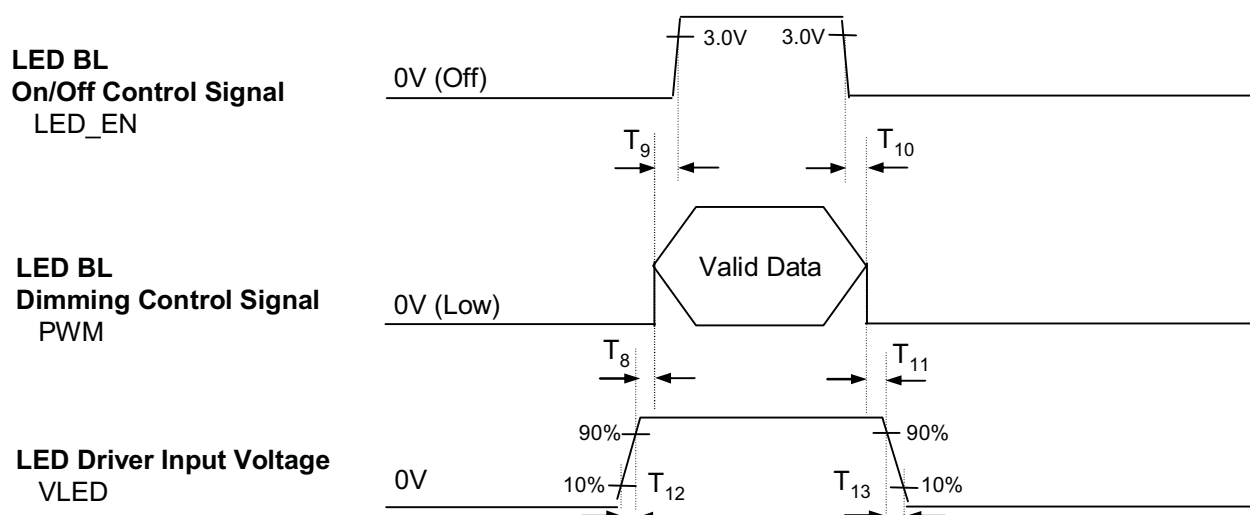


Table 6-1. POWER SEQUENCE TABLE

LED Parameter	Value			Units
	Min.	Typ.	Max.	
T_8	10	-	-	ms
T_9	0	-	-	ms
T_{10}	0	-	-	ms
T_{11}	10	-	-	ms
T_{12}	0.5	-	-	ms
T_{13}	0	-	5000	ms

Note)

1. LVDS, LED_EN and PWM need to be on pull-down condition on invalid status.

4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 20 minutes in a dark environment at 25°C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and Θ equal to 0°.

FIG. 1 presents additional information concerning the measurement equipment and method.

FIG. 1 Optical Characteristic Measurement Equipment and Method

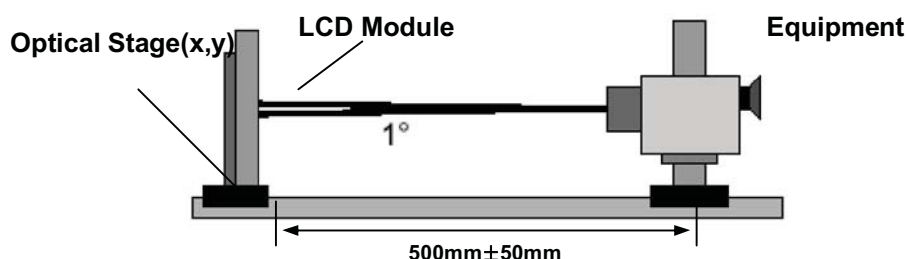


Table 7. OPTICAL CHARACTERISTICS

Ta=25°C, VCC=3.3V, f_v=60Hz, f_{CLK}= TBD MHz,
Backlight : LGD Standard

Parameter		Symbol	Values			Units	Notes
			Min	Typ	Max		
Transmittance (With POL)		%	-	TBD			
Surface Luminance, white		L _{WH}	170	200			
Contrast Ratio		CR	400	500	-		1
Response Time		Tr _R + Tr _D	-	16	25	ms	2
Color Coordinates							
	RED	RX	TBD	TBD	TBD		
		RY	TBD	TBD	TBD		
	GREEN	GX	TBD	TBD	TBD		
		GY	TBD	TBD	TBD		
	BLUE	BX	TBD	TBD	TBD		
		BY	TBD	TBD	TBD		
	WHITE	WX	0.283	0.313	0.343		
		WY	0.299	0.329	0.359		
Viewing Angle							3
	x axis, right(Φ=0°)	Θ _r	40	-	-	degree	
	x axis, left (Φ=180°)	Θ _l	40	-	-	degree	
	y axis, up (Φ=90°)	Θ _u	10	-	-	degree	
	y axis, down (Φ=270°)	Θ _d	30	-	-	degree	
Gray Scale							4
Color Gamut		C/G	-	45	-	%	

※ It can be guaranteed only when B/L have sheets that LGD recommended. (Prism & Diffuser sheet)

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Note)

1. Contrast Ratio(CR) is defined mathematically as

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

2. Response time is the time required for the display to transition from white to black (rise time, TrR) and from black to white(Decay Time, TrD). For additional information see FIG 2.

3. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 3.

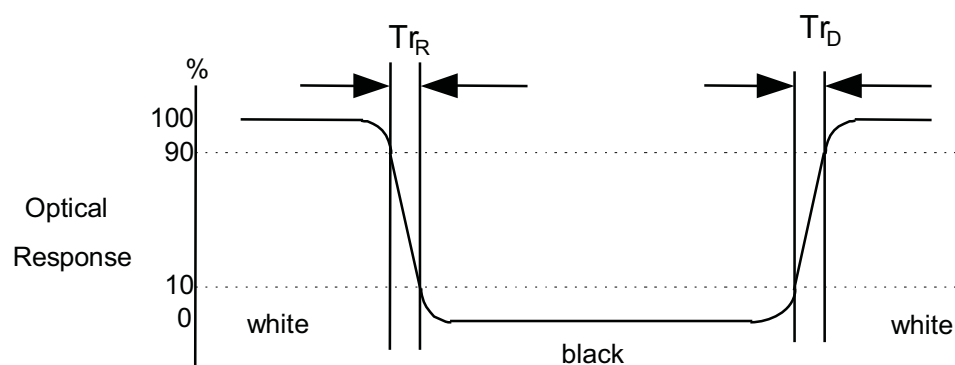
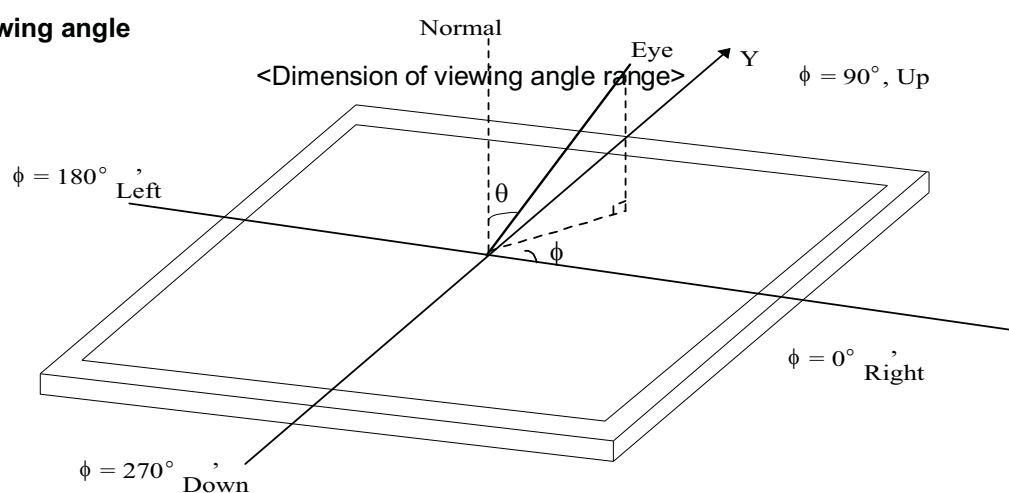
4. Gray scale specification

* fV = 60Hz

Gray Level	Luminance [%] (Typ)
L0	0.2
L7	1.2
L15	4.8
L23	10.9
L31	21.0
L39	34.8
L47	52.5
L55	74.2
L63	100.0

FIG. 2 Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".

**FIG. 3 Viewing angle**

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5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model LP133WH4. In addition the figures in the next page are detailed mechanical drawing of the board ass'y.

Outline Dimension (Without PCB)	Horizontal (A)	308.0 ± 0.2mm
	Vertical (B)	190.0 ± 0.2mm
	Thickness	1.27mm (Typ.)
Active Display Area	Horizontal	293.42 mm
	Vertical	164.97 mm
Weight	180 g (Max.)	
Surface Treatment	Glare treatment(3H) of the front polarizer	

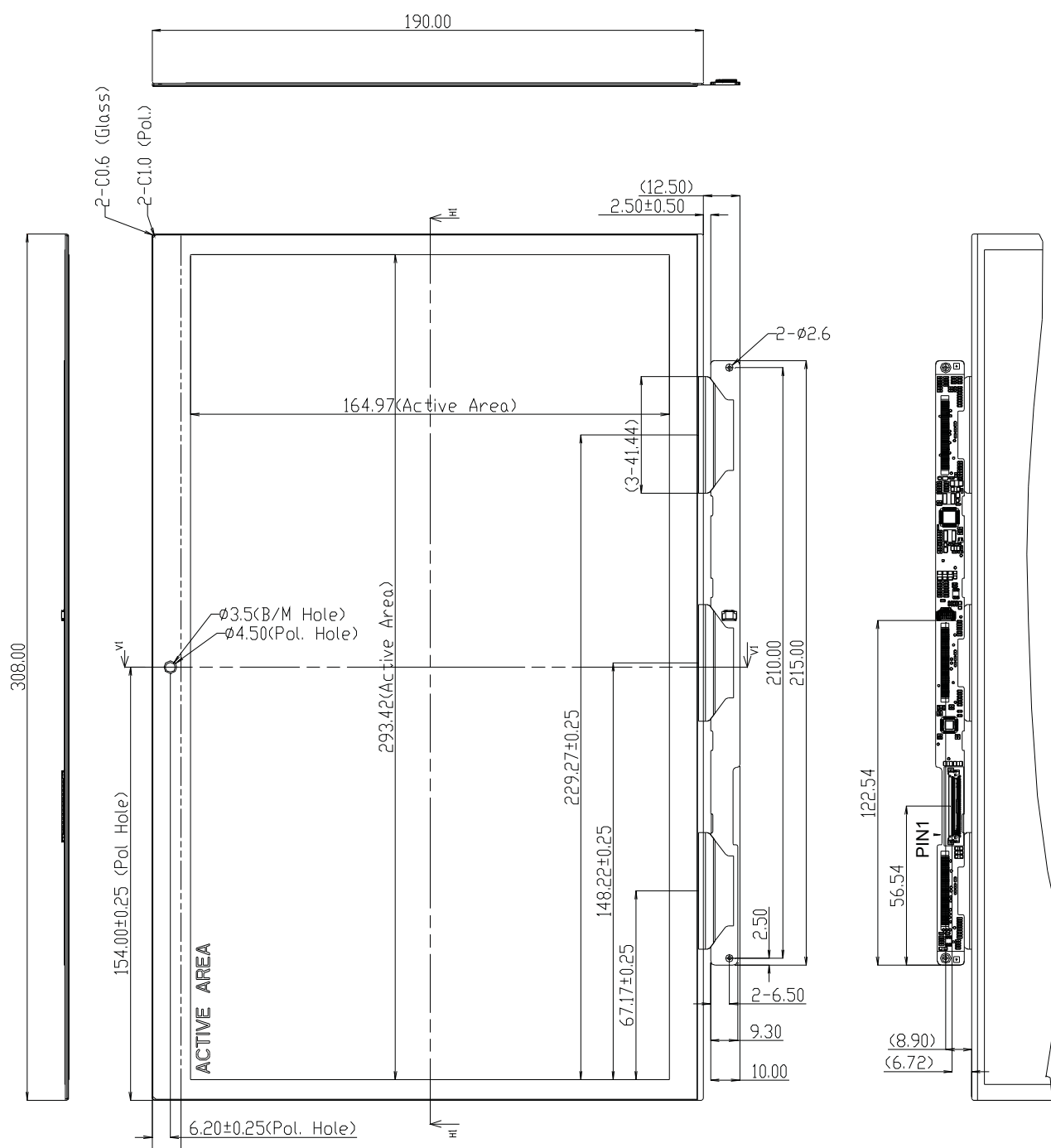


LP133WH4
Liquid Crystal Display

Product Specification

<FRONT VIEW>

Note) Unit:[mm], General tolerance: $\pm 0.5\text{mm}$



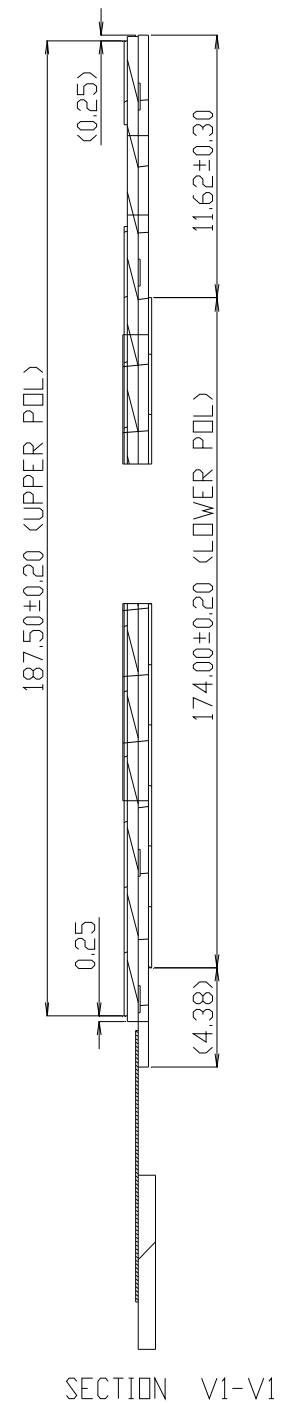
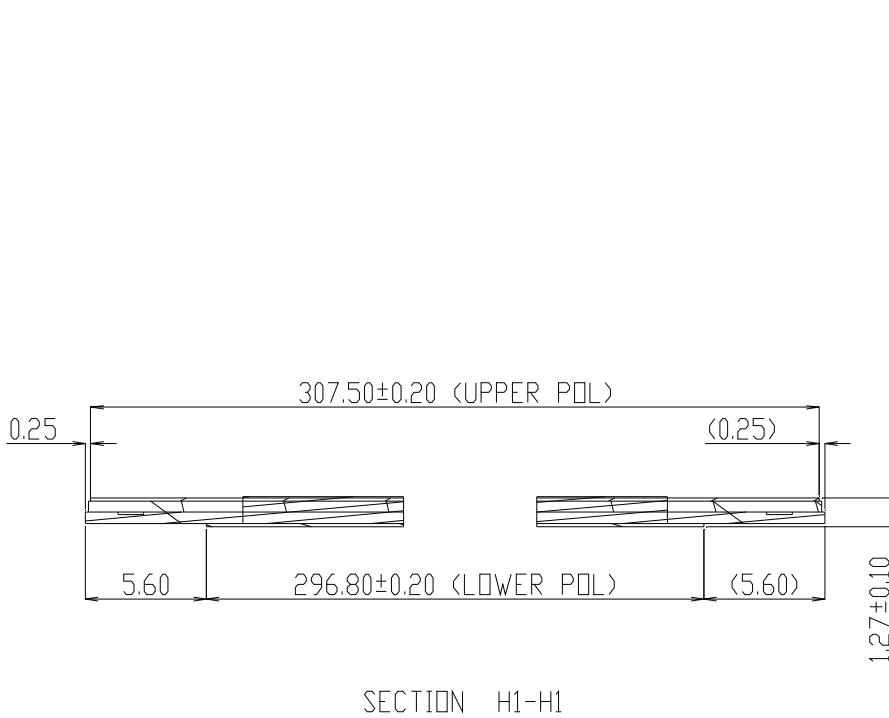


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Product Specification

<SECTION VIEW>

Note) Unit:[mm], General tolerance: $\pm 0.5\text{mm}$



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Product Specification

6. Reliability

Environment test condition

No.	Test Item	Conditions
1	High temperature storage test	Ta= 60°C, 240h
2	Low temperature storage test	Ta= -20°C, 240h
3	High temperature operation test	Ta= 50°C, 50%RH, 240h
4	Low temperature operation test	Ta= 0°C, 240h
5	Altitude operating storage / shipment	0 ~ 10,000 feet (3,048m) 24Hr 0 ~ 40,000 feet (12,192m) 24Hr

{ Result Evaluation Criteria }

There should be no change which might affect the practical display function when the display quality test is conducted under normal operating condition.

7. International Standards

7-1. Environment

a) RoHS, Directive 2002/95/EC of the European Parliament and of the council of 27 January 2003

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8. Packing

8-1. Designation of Lot Mark

a) Lot Mark

A	B	C	D	E	F	G	H	I	J	K	L	M
---	---	---	---	---	---	---	---	---	---	---	---	---

A,B,C : SIZE(INCH)
E : MONTHD : YEAR
F ~ M : SERIAL NO.

Note

1. YEAR

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Mark	A	B	C	D	E	F	G	H	J	K

2. MONTH

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mark	1	2	3	4	5	6	7	8	9	A	B	C

b) Location of Lot Mark

Serial No. is printed on the label. The label is attached to the backside of the LCD module.
This is subject to change without prior notice.

8-2. Packing Form

- a) Package quantity in one box : 20pcs
- b) BOT Box Size : TBD
- c) TOP Box Size : TBD
- d) Pallet Pattern : TBD

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9. PRECAUTIONS

Please pay attention to the followings when you use this board ass'y.

9-1. Assembly PRECAUTIONS

- (1) Please attach the surface transparent protective plate to the surface in order to protect the polarizer.
Transparent protective plate should have sufficient strength in order to resist external force.
- (2) You should adopt radiation structure to satisfy the temperature specification.
- (3) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.
- (4) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer.)
- (5) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaked with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
- (6) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (7) Do not open the case because inside circuits do not have sufficient strength.
- (8) Mechanical structure for backlight system should be designed for sustaining board ass'y safely.

9-2. OPERATING PRECAUTIONS

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage :
 $V = \pm 200\text{mV}$ (Over and under shoot voltage)
- (2) Response time depends on the temperature. (In lower temperature, it becomes longer.)
- (3) Brightness depends on the temperature. (In lower temperature, it becomes lower.)
And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.
- (4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (5) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (7) Please do not give any mechanical and/or electrical impact to board ass'y. Otherwise, it can't be operated its full characteristics perfectly.

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9-3. ELECTROSTATIC DISCHARGE CONTROL

Board ass'y is composed of electronic circuits, so it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch drive IC directly.

Panel ground path should be connected to metal ground.

9-4. PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5. STORAGE

When storing modules as spares for a long time, the following precautions are necessary.

- (1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
- (2) The polarizer surface should not come in contact with any other object.
It is recommended that they be stored in the container in which they were shipped.

9-6. HANDLING PRECAUTIONS FOR PROTECTION FILM

- (1) When the protection film is peeled off, static electricity is generated between the film and polarizer.
This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
- (2) The protection film is attached to the polarizer with a small amount of glue. If some stress is applied to rub the protection film against the polarizer during the time you peel off the film, the glue is apt to remain on the polarizer.
Please carefully peel off the protection film without rubbing it against the polarizer.
- (3) When the Board ass'y with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the polarizer after the protection film is peeled off.
- (4) You can remove the glue easily. When the glue remains on the polarizer surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.

10. Inspection-Free Area

- ❑ LGD define Inspection-Free Area as 0.7mm between
 - Polarizer edge to glass edge area (assigned to all side of panel)
 - Web-cam hole area
- ❑ LGD does not guarantee the Web-Cam hole contamination caused by the finger touch after shipping out.

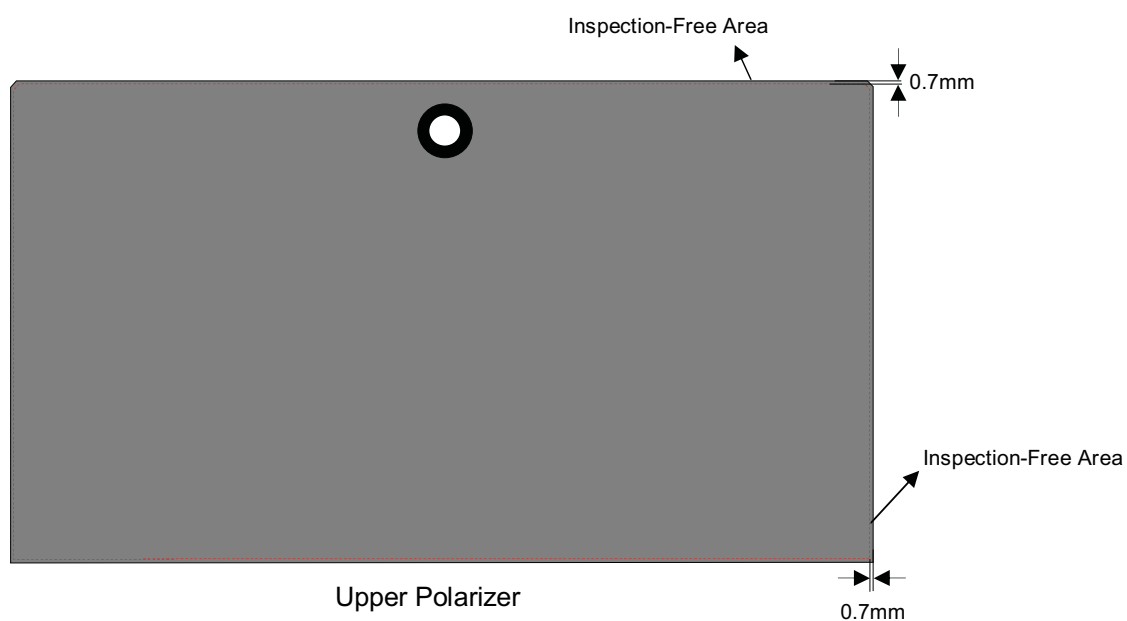


Fig 1. Defining Upper Polarizer area

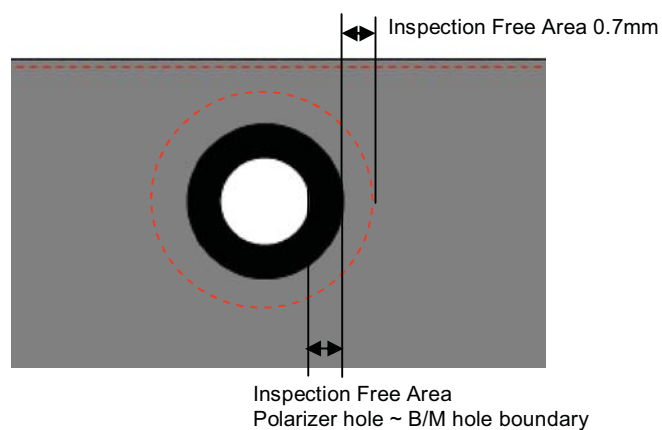


Fig 2. Defining Webcam Hole area

Product Specification

11. Panel Burr & Chip (1)

□ LGD define specification of chipping and remained bur based on the LGD capability data

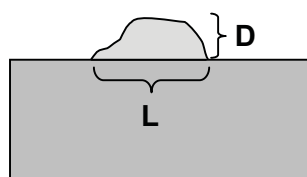
<Standard Line : TFT, unit : mm>

Model	Edge			
	Seal Cross (A)		Others (B)	
	Burr	Chipping	Burr	Chipping
LP133WH4-TJA1				
LP140WH6-TJA1	$L \leq 4.0$	$L \leq 4.0$	$L \leq 4.0$	$L \leq 4.0$
LP140WH6-TJB1	$D \leq 0.5$	$D \leq 1.0$	$D \leq 0.4$	$D \leq 1.0$
LP156WH5-TJA1				

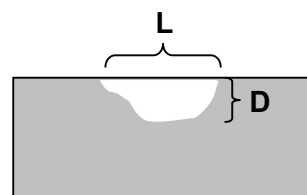


A Area  : Seal overlap Area
 B Area  : Others Area

Burr



Chipping





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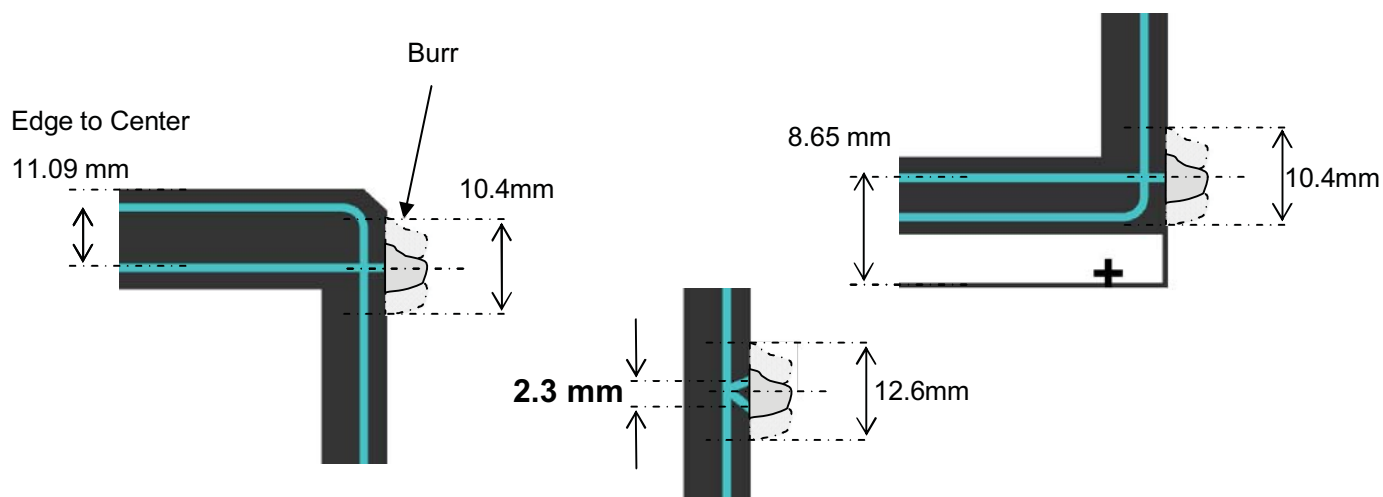
Product Specification

11. Panel Burr & Chip (2)

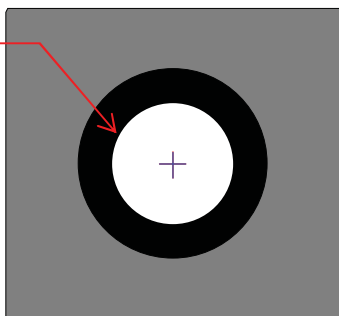
□ LGD define specification of chipping and remained burr based on the LGD capability data



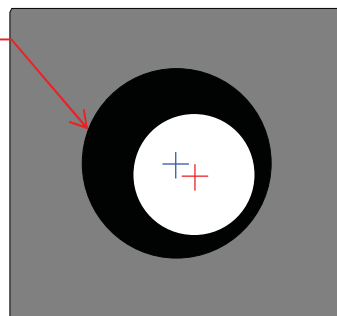
Burr position in "A" area's



12. Web-Cam Hole Shift

B/M Hole

[OK Sample]

Pol. Hole

[NG Sample]

X-Direction Shift : $\pm 0.25\text{mm}$ Y-Direction Shift : $\pm 0.30\text{mm}$



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Product Specification

APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 1/3



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Product Specification

APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 2/3



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Product Specification

APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 3/3